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Toshitake Kobayashi

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ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

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DETAILED ACTION

The previous rejections maintained (see rejections reiterated below).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 12-16, 19-21, 23-26, 28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,326,074 to Takahashi in view of US 6,306,947 to Morishima et al.

Takahashi teaches per instant Claim 1. A decorative material comprising at least a substrate (penetrable porous paper 1, FIGS. 1E and 2 and associated text, of penetrable paper, 4:44-45 (claim 16)), a low-luster pattern ink layer (nonpenetrable layer 5, FIGS. 1E and 2 and associated text, of the same compositions comprising pigments, silica (extender), and resins as in [0076] as in instant specification, and printed in a pattern, thus functioning as low-luster pattern ink layer, see also 5:40-68 teaching extender pigments) partially formed on the substrate, a color solid print (2, FIGS. 1E and 2 and

associated text, penetration-preventing) and a surface protective layer (6, FIGS. 1E and 2 and associated text) which is present on and in direct contact with the low-luster pattern ink layer so as to cover a whole surface including both a region where the low-luster pattern ink layer is formed (see regions where 5 is present) and a region where no low-luster pattern ink layer is formed (see regions where 5 is not present), wherein the surface protective layer is formed by crosslinking and curing an ionizing radiation-curable resin composition with UV or electron beam (6:18-30, methacrylate monomer or vinyl acetate or epoxy resins (claims 2, 4, 24), and provided therein with a first low-gloss region which is located in a portion just above the low-luster pattern ink layer (see region above 5, FIGS. 1E and 2 and associated text) and in the vicinity of the portion, and with a second low-gloss region (any area surrounding the pattern layer 5 that isn't one of the aforementioned regions such as to the left or right of the pattern, or any area extending laterally in any direction, or circumferentially surrounding the pattern), inherently having a lower gloss than a second low-gloss region because the same materials are employed, and the low-luster pattern ink layer serves to generate a gloss difference and elution, dispersion, and mixing cause inherently due to the same materials and same structure, wherein the first region is visually recognized as a concave portion (see upper concave sub-regions illustrated in topcoat 6, FIGS. 1E and 2, 4:61-63, Example 1) and the first region has a convex shape (see convex shape in FIGS. 1E and 2). Regarding claims 2- 3 and 1, the nonpenetrable low-luster pattern ink layer

contains a non-crosslinked urethane (while not explicitly recited as "non-crosslinked" see 5:50-53, because the urethane is not said to be crosslinked with a crosslinking agent, then it is not crosslinked, and the ionizing resin also includes methacrylate monomer and unsaturated polyester-6:48-50 and 6:39 (while referred to generally at 5:50-51, is explained further to include additional ingredients at 6:39-50, (claims 2-4 and 30-33). Takahashi explains methacrylate monomer may be used alone at 6:35 (claim 4). Color solid print (2, FIGS. 1E and 2, and associated text), Takahashi teaches has an additional function to prevent the penetration of the ink (4:40-46) and states it functions as a penetration prevention layer. (Claims 15 and 26). Takahashi teaches attachment of the sheet to various adherends such as walls (7:50-60) and laminated onto wood or glass plates (4:20-36, claim 28). While Takahashi does not explicitly recite first and second sub-regions/sub-regions and gloss differentials and comparisons, see Examples 1-13 that clearly teach a glossiness (gloss) difference between gloss and non-gloss sub-regions and difference in convex and concave levels (claim 25). Claims 1-4, 12-16, 19, 23-26, 28, and 30-33 are addressed.

Further to claims 1-2, Takahashi does not teach the non-crosslinked urethane resin having the required number average molecular weight (Mn) or glass transition (Tg).

However, Morishima teaches an ink composition including unsaturated ester and acrylic (13:1-15, 9:25-30) wherein urethane resin has a Mn from 1,00 to 50,000,

(falling in Applicant's range of 10,000-50,000) which results in an excellent coating for printing on all substrates (including plastic, metal, and wood) yielding gloss, adhesiveness and pigment dispersibility properties see-16:45-53, 1:1-25, 17:55-18:2.

While the Tg is not disclosed, it is inherent because the Mn range is within the range of Applicant and Tg is directly related to Mn as it is well known to test the resin using a DSC (differential scanning calorimeter).

Therefore, it would have been obvious to one having ordinary skill in the art to have modified the ink layer of Takahashi to substitute the ink of Morishima to provide excellent coating for printing on all substrates (including plastic) yielding gloss, adhesiveness and pigment dispersibility properties as cited above.

To instant claims 5-6, and 20-21 the sub-layers and thickness are not recited, however, it is submitted the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since it has long being held that such discovery, such as an optimum value of the respective result effective variable involves only routine skill in the art. *In re boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980). The thickness of ink affects the design and aesthetics. Though we are fully cognizant of the hindsight bias that often plagues determinations of obviousness, Graham v. John Deere Co., 383 U.S. 1, 36 (1966), we are also mindful that "the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results," KSR Int'l Co. v. Teleflex

Inc., 127 S. Ct. 1727, 1739 (2007). The thickness of the low-luster pattern with corresponding sub-layers, because of their thickness, will indeed directly affect the amount of gloss or luster given off.

Further note it is proper to take into account not only specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom..." The analysis supporting obviousness, however, should be made explicit and should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements" in the manner claimed. *KSR*, 127 S. Ct. at 1739, 82 USPQ2d at 1396. Motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself. *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

Attention is directed to the following regarding the obviousness of ranges of the decorative pattern:

- Printing the low-gloss patterns and sub-layers on a substrate is known in the art as provided by Takahashi et al. set forth above and are purely decorative in nature.
 - It has been held that mere printed matter having no new or unobvious functional relationship between the printed matter and the substrate is unpatentable. See *In re Gulack*, 703 F.2d 1381, 217 U.S.P.Q. 401 (Fed. Cir. 1983).
 - The court found that matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. See *In re Seid* 161 F.2d 229, 73 USPQ 431 (CCPA 1947).

- Changes in size (i.e. the thickness or size of said pattern layers) are not germane to patentability.
 - Size of an article ordinarily is not a matter of invention. The size and thickness recitations are all deemed matters of choice involving differences in degree and/or size and are not patentable distinctions. *In re Rose*, 105 USPQ 237.
 - In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.
- Manipulating design elements and adjusting the ranges of the decorative patterns including sub-layers are within skill of the art.
 - It has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284.
 - It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Thus, given that the prior art accounts for various patterns, the decorative patterns instantly claimed are obvious and optimizable for providing decoration to the sheet absent unexpected results or criticality.

Claims 1 -4, 23-26, 28, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,326,074 to Takahashi in view of US 6,306,947 to Morishima et al. and further in view of US 5,296,340 to Tsukada et al.

Takahashi and Morishima teach the claimed invention (see materials above for claims 1-2, 23-26, 28 and 30-33).

Takahashi does not expressly refer to a "non-crosslinked" urethane instant claims 1- 3, while the urethane is not said to be crosslinked as set forth above, namely the ink layer containing a non-crosslinked urethane resin and methacrylate for the ionizing radiation-curable resin, or instant claim 3 unsaturated polyester or claim 4.

Tsukada teaches a similar decorative material comprising an ink comprising either an ionizing radiation-curable resin or it's mixture with an ionizing uncureable resin vehicle (binder) employing urethane, polyesters or an acrylic acid modified polyester (similar structure to unsaturated polyester, thus similar properties expected) and a (meth)acrylate monomer (3:10-15, 3:65-68, 4:1-50, 7:60-68, 8:45-68, 9:9-30).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of Takahashi to use or substitute an uncureable resin and methacrylate monomer because Tsukada teaches they are conventional resins used in inks and similar layers in a decorative material sheet (3:10-15, 3:65-68, 4:1-50, 7:60-68, 8:45-68, 9:9-30). To instant claim 4, choosing solely methacrylate monomer is an obvious choice resin since Tsukada teaches a variety of resins in a list, picking only one is obvious because the same results are expected. Moreover, Takahashi explains said monomer may be used alone at 6:35. Mixtures of said ingredients are obvious to choose from a list of already known materials for known properties producing known results as cited above. See further KSR rationale below.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,326,074 to Takahashi in view of US 6,306,947 to Morishima et al. and further in view of US 5,296,340 to Tsukada et al. and further in view of Ogawa.

The references are relied upon above.

Said references do not teach the particles as per instant claim 21.

Ogawa teaches fine particles, particularly, baked kaolin which is a widely known filler and used as an equivalent to calcium carbonate and mixed with silica applied to a variety of films and coating resin compositions (9:30-68,10:1-55).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the ingredients as claimed because Ogawa teaches baked kaolin is a widely known filler used as equivalents to calcium carbonate and mixed with silica (10:1-15) applied to a variety of films (9:30-68). Further, it is submitted the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since it has long being held that such discovery, such as an optimum value of the respective result effective variable involves only routine skill in the art. *In re boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,326,074 to Takahashi in view of US 6,306,947 to Morishima et al. and further in view of US 5,296,340 to Tsukada et al. and further in view of 4,855,184 to Klun et al.

The references are relied upon above. Said references do not teach the particles as per instant claim 22.

Klun teaches a radiation-curable coating protective layer of ethylene oxide and propylene oxide with N-methylolacrylamides for wood or plastic coatings; see further 1:1-10, 18: 25-30, 20:19-30.

Ogawa teaches fine particles, particularly, baked kaolin which is a widely known filler and used as an equivalent to calcium carbonate and mixed with silica applied to a variety of films and coating resin compositions (9:30-68,10:1-55).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the ingredients as claimed because Klun teaches it is a composition for radiation -curable protective coatings for plastic and wood substrates and Ogawa teaches baked kaolin is a widely known filler used as equivalents to calcium carbonate and mixed with silica (10:1-15) applied to a variety of films (9:30-68).

Claim 7-10 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,326,074 to Takahashi in view of US 6,306,947 to Morishima et al. in view of US 6,841,221 to MacQueen.

Takahashi and Morishima teach the claimed invention above.

Takahashi discloses the ionizing radiation curable resin composition for the surface protecting layer.

Takahashi does not expressly teach the composition recited per instant claims 7-10, but does teach a similar curable coating. Takahashi teaches pigments and fine powders of calcium carbonate, and silica may be further additives within the ionizing radiation curing resin (7:10-20), which the surface layer is comprised of.

MacQueen teaches a decorative material wherein fine micro-capsules having a particle size of between 5-80 microns in a preferable concentration of 0.1-10 wt.% (falling within Applicant's range-claim 10) wherein said wt% may be varied to produce a textured protruding surface is overcoated with a similar UV curable urethane resin composition resulting in an aesthetically pleasing surface including properties such as wear and slip resistance. See Abstract, 1:1-35, 4:25-68, 5:1-10, 6:1-20, 7:19-50, FIG. 1(c).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the protruding fine particles as claimed because MacQueen teaches results such as an aesthetically pleasing surface including properties such as wear and slip resistance as cited above.

Takahashi and Morishima do not expressly teach all the values recited per instant claims 7-10. It is submitted the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since MacQueen explains concentration and size effects the texture and aesthetics, and since it has long being held that such discovery, such as an optimum value of the respective result effective variable involves only routine skill in the art. *In re boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980). Further thickness is a size modification and affects the texture. Moreover, it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284. Size of an article ordinarily is not a matter of invention. The size and thickness recitations are all deemed matters of choice involving differences in degree and/or size and are not patentable distinctions. *In re Rose*, 105 USPQ 237.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,326,074 to Takahashi in view of US 6,306,947 to Morishima et al. in view of US 4,855,184 to Klun et al. and further in view of USPN 5,266,397 to Ogawa et al.

The combination teaches the claimed invention above. Takahashi discloses the ionizing radiation curable resin composition for the surface protecting layer.

Takahashi does not expressly teach the composition recited per instant claim 11, but does teach trimethylolpropane ethylene oxide tri(meth)acrylate see 6:56-57.

Takahashi teaches pigments and fine powders of calcium carbonate, and silica may be further additives within the ionizing radiation curing resin (7:10-20), which the surface layer is comprised of. However, Takahashi does not teach baked kaolin per instant claim 11.

Klun teaches a radiation-curable coating protective layer of ethylene oxide and propylene oxide with N-methylolacrylamides for wood or plastic coatings; see further 1:1-10, 18: 25-30, 20:19-30.

Ogawa teaches fine particles, particularly, baked kaolin which is a widely known filler and used as an equivalent to calcium carbonate and mixed with silica applied to a variety of films and coating resin compositions (9:30-68,10:1-55).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the ingredients as claimed because Klun teaches it is a composition for radiation -curable protective coatings for plastic and wood substrates and Ogawa teaches baked kaolin is a widely known filler used as equivalents to calcium carbonate and mixed with silica (10:1-15) applied to a variety of films (9:30-68).

Claims 1, 5-6, 12-19, 30-31 and 34 and are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,558,799 to Takeuchi et al. in view of USPN 6,326,074 to Takahashi and further in view of US 6,306,947 to Morishima et al.

Takeuchi teaches a decorative material in this order : 1, substrate (the Figure and associated text), 2A a penetrating preventing or color layer, 2B contains a pattern print, 2C is a color/penetration preventing layer, having a surface layer 3 on top. All of the layers except the substrate are from the same ionizing curable resin.

Takeuchi does not teach a concave portion and ink layer in that order laminated over the order per the instant claims (1, 5-6, 13-18, 30-31 and 34).

Takahashi teaches a decorative material comprising at least a substrate (penetrable porous paper 1, FIGS. 1E and 2 and associated text, of penetrable paper, 4:44-45), a low-luster pattern ink layer (nonpenetrable layer 5, FIGS. 1E and 2 and associated text, of the same compositions comprising pigments, silica (extender-claim 12), and resins as in [0076] as in instant specification, and printed in a pattern, thus functioning as low-luster pattern ink layer, see also 5:40-68 teaching extender pigments) partially formed on the substrate, and a surface protective layer (6, FIGS. 1E and 2 and associated text) which is present on and in direct contact with the low-luster pattern ink layer so as to cover a whole surface including both a region where the low-luster pattern ink layer is formed (see regions where 5 is present) and a region where no low-luster pattern ink layer is formed (see regions where 5 is not present), wherein the surface protective layer is formed by crosslinking and curing an ionizing radiation-curable resin composition (methacrylate monomer or vinyl acetate or epoxy resins), and provided therein with a first region which is located in a portion just above the low-

luster pattern ink layer (see region above 5, FIGS. 1E and 2 and associated text) and in the vicinity of the portion, and with a second region (any area extending laterally, or circumferentially surrounding the pattern layer 5 that isn't one of the aforementioned regions such as to the left or right of the pattern), inherently having a lower gloss than a second region because the same materials are employed, and the low-luster pattern ink layer serves to generate a gloss difference inherently due to the same materials, wherein the first region is visually recognized as a concave portion (see upper concave sub-regions illustrated in topcoat 6, FIGS. 1E and 2, 4:61-63, Example 1) and the first region has a convex shape (see convex shape in FIGS. 1E and 2). While Takahashi does not explicitly recite first and second sub-regions/sub-regions and gloss differentials and comparisons, see Examples 1-13 that clearly teach a glossiness (gloss) difference between gloss and non-gloss sub-regions and difference in convex and concave levels.

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of Takeuchi to include overtop a laminated topcoat surface protective layer and low-gloss pattern as claimed because Takahashi teaches such a covering provides an embossed three-dimensional effect (4:1-15 and as cited above).

The wood grain pattern (9:50-60 inherently having vessels because it is a wood grained pattern) of claim 18 is provided by Takeuchi and embraced (4:45-60, grains, tile

patterns) by Takahashi, and would have been expected to produce a pattern as set forth in claim 18.

To instant claims 5-6, the thickness is not recited, however, the same silk screen printing method is used as in the instant specification (9:35-40, Takeuchi), and materials, and thus the thickness would be expected. It is submitted the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since it has long being held that such discovery, such as an optimum value of the respective result effective variable involves only routine skill in the art. *In re boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980). Though we are fully cognizant of the hindsight bias that often plagues determinations of obviousness, Graham v. John Deere Co., 383 U.S. 1, 36 (1966), we are also mindful that "the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results," KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1739 (2007). The thickness of the low-luster pattern with corresponding sub-layers, because of their thickness, will indeed directly affect the amount of gloss or luster given off.

Further note it is proper to take into account not only specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom..." The analysis supporting obviousness, however, should be made explicit and should "identify a reason that would have prompted a person of

ordinary skill in the relevant field to combine the elements” in the manner claimed. *KSR*, 127 S. Ct. at 1739, 82 USPQ2d at 1396. Motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself. *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

Attention is directed to the following regarding the obviousness of ranges of the decorative pattern:

- Printing the low-gloss patterns and sub-layers on a substrate is known in the art as provided by Takahashi et al. set forth above and are purely decorative in nature.
 - It has been held that mere printed matter having no new or unobvious functional relationship between the printed matter and the substrate is unpatentable. See *In re Gulack*, 703 F.2d 1381, 217 U.S.P.Q. 401 (Fed. Cir. 1983).
 - The court found that matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. See *In re Seid* 161 F.2d 229, 73 USPQ 431 (CCPA 1947).
- Changes in size (i.e. the thickness or size of said pattern layers) are not germane to patentability.
 - Size of an article ordinarily is not a matter of invention. The size and thickness recitations are all deemed matters of choice involving differences in degree and/or size and are not patentable distinctions. *In re Rose*, 105 USPQ 237.
 - In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.
- Manipulating design elements and adjusting the ranges of the decorative patterns including sub-layers are within skill of the art.

- It has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284.
- It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Thus, given that the prior art accounts for various patterns, the decorative patterns instantly claimed are obvious and optimizable for providing decoration to the sheet absent unexpected results or criticality. Mixtures of said ingredients are obvious to choose from a list of already known materials for known properties producing known results as cited above. See further KSR rationale above.

Further to claim 1, Takeuchi nor Takahashi do not teach the non-crosslinked urethane resin having the required number average molecular weight (Mn) or glass transition (Tg).

However, Morishima teaches an ink composition including unsaturated ester and acrylic (13:1-15, 9:25-30) wherein urethane resin has a Mn from 1,00 to 50,000, (falling in Applicant's range of 10,000-50,000) which results in an excellent coating for printing on all substrates (including plastic, metal, and wood) yielding gloss, adhesiveness and pigment dispersibility properties see-16:45-53, 1:1-25, 17:55-18:2.

While the Tg is not disclosed, it is inherent because the Mn range is within the range of Applicant and Tg is directly related to Mn as it is well known to test the resin using a DSC (differential scanning calorimeter).

Therefore, it would have been obvious to one having ordinary skill in the art to have modified the ink layer of the combination to substitute the ink of Morishima to provide excellent coating for printing on all substrates (including plastic) yielding gloss, adhesiveness and pigment dispersibility properties as cited above.

Further to claim 19, to stick the invention on a plate is an obvious modification and because the article of claim 1 is decorative, it would have been obvious to one having ordinary skill in the art to make a plate decorative by attaching it. See KSR rationale above.

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,558,799 to Takeuchi et al. in view of USPN 6,326,074 to Takahashi and further in view of US 6,306,947 to Morishima et al. and further in view of US 6,841,221 to MacQueen.

The combination teaches the claimed invention above.

The combination discloses the ionizing radiation curable resin composition for the surface protecting layer.

The combination does not expressly teach the composition recited per instant claims 7- 10, but does teach a similar curable coating. Takahashi teaches pigments and fine powders of calcium carbonate, and silica may be further additives within the ionizing radiation curing resin (7:10-20), which the surface layer is comprised of.

MacQueen teaches a decorative material wherein fine micro-capsules having a particle size of between 5-80 microns in a preferable concentration of 0.1-10 wt.% (falling within Applicant's range-claim 10) wherein said wt% may be varied to produce a textured protruding surface is overcoated with a similar UV curable urethane resin composition resulting in an aesthetically pleasing surface including properties such as wear and slip resistance. See Abstract, 1:1-35, 4:25-68, 5:1-10, 6:1-20, 7:19-50, FIG. 1(c).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the protruding fine particles as claimed because MacQueen teaches results such as an aesthetically pleasing surface including properties such as wear and slip resistance as cited above.

The combination does not expressly teach all the values recited per instant claims 7-10. It is submitted the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since MacQueen explains concentration and size effects the texture and aesthetics, and since it has long being held that such discovery, such as an optimum value of the respective result effective variable involves only routine skill in the art. *In re boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980). Further thickness is a size modification and affects the texture. Moreover, it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284. Size of an article ordinarily is not a matter of invention. The size and thickness recitations are all deemed

matters of choice involving differences in degree and/or size and are not patentable distinctions. In re Rose, 105 USPQ 237.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,558,799 to Takeuchi et al. in view of USPN 6,326,074 to Takahashi and further in view of US 6,306,947 to Morishima et al. and further in view of US 4,855,184 to Klun et al. and USPN 5,266,397 to Ogawa et al.

The combination teaches the claimed invention above. The combination discloses the ionizing radiation curable resin composition for the surface protecting layer.

The combination does not expressly teach the composition recited per instant claim 11, but does teach trimethylolpropane ethylene oxide tri(meth)acrylate see 6:56-57. Additionally, Takahashi teaches pigments and fine powders of calcium carbonate, and silica may be further additives within the ionizing radiation curing resin (7:10-20), which the surface layer is comprised of. However, Takahashi does not teach baked kaolin per instant claim 11.

Klun teaches a radiation-curable coating protective layer of ethylene oxide and propylene oxide with N-methylolacrylamides for wood or plastic coatings; see further 1:1-10, 18: 25-30, 20:19-30.

Ogawa teaches fine particles, particularly, baked kaolin which is a widely known filler and used as an equivalent to calcium carbonate and mixed with silica applied to a variety of films and coating resin compositions (9:30-68,10:1-55).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the ingredients as claimed because Klun teaches it is a composition for radiation -curable protective coatings for plastic and wood substrates and Ogawa teaches baked kaolin is a widely known filler used as equivalents to calcium carbonate and mixed with silica (10:1-15) applied to a variety of films (9:30-68).

Claims 2-4 , 20-21, 23-29, 30-33, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,558,799 to Takeuchi et al. in view of USPN 6,326,074 to Takahashi and further in view of US 5,296,340 to Tsukada et al. and further in view of US 6,306,947 to Morishima et al.

Takeuchi teaches a decorative material in this order : 1, substrate (the Figure and associated text), 2A a penetrating preventing or color layer, 2B contains a pattern print, 2C is a color/penetration preventing layer, having a surface layer 3 on top. All of the layers except the substrate are from the same ionizing curable resin.

Takeuchi does not teach a concave portion and ink in that order laminated over the order as disclosed by Takeuchi and the instant claims. Takeuchi doesn't explicitly

reference a “non-crosslinked” urethane as per instant claim 2, namely the ink layer containing a non-crosslinked urethane resin and methacrylate for the ionizing radiation-curable resin or the ingredients per claims 2-4 and 32-33.

Takahashi teaches a decorative material comprising at least a substrate (penetrable porous paper 1, FIGS. 1E and 2 and associated text, of penetrable paper, 4:44-45), a low-luster pattern ink layer (nonpenetrable layer 5, FIGS. 1E and 2 and associated text, of the same compositions comprising pigments, silica (extender), and resins as in [0076] as in instant specification, and printed in a pattern, thus functioning as low-luster pattern ink layer, see also 5:40-68 teaching extender pigments) partially formed on the substrate, and a surface protective layer (6, FIGS. 1E and 2 and associated text) which is present on and in direct contact with the low-luster pattern ink layer so as to cover a whole surface including both a region where the low-luster pattern ink layer is formed (see regions where 5 is present) and a region where no low-luster pattern ink layer is formed (see regions where 5 is not present), wherein the surface protective layer is formed by crosslinking and curing an ionizing radiation-curable resin composition (methacrylate monomer or vinyl acetate or epoxy resins), and provided therein with a first region which is located in a portion just above the low-luster pattern ink layer (see region above 5, FIGS. 1E and 2 and associated text) and in the vicinity of the portion, and with a second region (any area surrounding the pattern layer 5 that isn't one of the aforementioned sub-regions such as to the left or right of the pattern), inherently having

a lower gloss than a second region because the same materials are employed, and the low-luster pattern ink layer serves to generate a gloss difference inherently due to the same materials, wherein the first region is visually recognized as a concave portion (see upper concave sub-regions illustrated in topcoat 6, FIGS. 1E and 2, 4:61-63, Example 1) and the first region has a convex shape (see convex shape in FIGS. 1E and 2). Takahashi teaches attachment of the sheet to various adherends such as walls (7:50-60) and laminated onto wood or glass plates (4:20-36, claim 28). While Takahashi does not explicitly recite first and second sub-regions/sub-regions and gloss differentials and comparisons, see Examples 1-13 that clearly teach a glossiness (gloss) difference between gloss and non-gloss sub-regions and difference in convex and concave levels.

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of Takeuchi to include overtop a laminated topcoat surface protective layer and low-gloss pattern as claimed because Takahashi teaches such a covering provides an embossed three-dimensional effect (4:1-15 and as cited above). Thus the structure of claims 2, 20-21, and 23-27, and 30-33 and 35 are envisioned.

The combination does explicitly reference a “non-crosslinked” urethane as per instant claim 2, namely the ink layer containing a non-crosslinked urethane resin and methacrylate for the ionizing radiation-curable resin or the ingredients per claims 3-4 and 32-33.

Tsukada teaches a similar decorative material comprising an ink comprising either an ionizing radiation-curable resin or it's mixture with an ionizing uncureable resin vehicle (binder) employing urethane, polyesters or an acrylic acid modified polyester (similar structure to unsaturated polyester, thus similar properties expected) and a (meth)acrylate monomer (3:10-15, 3:65-68, 4:1-50, 7:60-68, 8:45-68, 9:9-30).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to use an uncureable resin and methacrylate monomer because Tsukada teaches they are conventional resins used in inks and similar layers in a decorative material sheet (3:10-15, 3:65-68, 4:1-50, 7:60-68, 8:45-68, 9:9-30). Mixtures of said ingredients are obvious to choose from a list of already known materials for known properties producing known results as cited above. See further KSR rationale above.

Further to claim 2, the combination above does not teach the non-crosslinked urethane resin having the required number average molecular weight (M_n) or glass transition (T_g).

However, Morishima teaches an ink composition including unsaturated ester and acrylic (13:1-15, 9:25-30) wherein urethane resin has a M_n from 1,00 to 50,000, (falling in Applicant's range of 10,000-50,000) which results in an excellent coating for printing on all substrates (including plastic, metal, and wood) yielding gloss, adhesiveness and pigment dispersibility properties see-16:45-53, 1:1-25, 17:55-18:2.

While the Tg is not disclosed, it is inherent because the Mn range is within the range of Applicant and Tg is directly related to Mn as it is well known to test the resin using a DSC (differential scanning calorimeter).

Therefore, it would have been obvious to one having ordinary skill in the art to have modified the ink layer of the combination to substitute the ink of Morishima to provide excellent coating for printing on all substrates (including plastic) yielding gloss, adhesiveness and pigment dispersibility properties as cited above.

Further providing the article of claim 2 on a plate (claim 28) is an obvious modification, it would have been obvious to one having ordinary skill in the art to decorate a plate because claim 2 is decorative see KSR rationale above.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,558,799 to Takeuchi et al. in view of USPN 6,326,074 to Takahashi and further in view of US 5,296,340 to Tsukada et al. and further in view of US 6,306,947 to Morishima et al. and further in view of US 4,855,184 to Klun et al. and USPN 5,266,397 to Ogawa et al.

The combination teaches the claimed invention above. The combination discloses the ionizing radiation curable resin composition for the surface protecting layer.

The combination does not expressly teach the composition recited per instant claim 11, but does teach trimethylolpropane ethylene oxide tri(meth)acrylate see 6:56-

57. Additionally, Takahashi teaches pigments and fine powders of calcium carbonate, and silica may be further additives within the ionizing radiation curing resin (7:10-20), which the surface layer is comprised of. However, Takahashi does not teach baked kaolin per instant claim 11.

Klun teaches a radiation-curable coating protective layer of ethylene oxide and propylene oxide with N-methylolacrylamides for wood or plastic coatings; see further 1:1-10, 18: 25-30, 20:19-30.

Ogawa teaches fine particles, particularly, baked kaolin which is a widely known filler and used as an equivalent to calcium carbonate and mixed with silica applied to a variety of films and coating resin compositions (9:30-68,10:1-55).

It would have been obvious to one having ordinary skill in the art to have modified the decorative material of the combination to include the ingredients as claimed because Klun teaches it is a composition for radiation -curable protective coatings for plastic and wood substrates and Ogawa teaches baked kaolin is a widely known filler used as equivalents to calcium carbonate and mixed with silica (10:1-15) applied to a variety of films (9:30-68).

Response to Arguments

Applicant's arguments filed 04/26/10 have been fully considered but they are not persuasive.

Applicant argues Takahashi teaches away from the penetration and mixing between layers in the present invention due to the teaching of the concave—convex appearance due to use of Takahashi's non-penetrable layer. This argument is not convincing because Takahashi teaches the same order as Applicant. There is a protective layer (6), Fig. 2 on the substrate 1 via 4 and the ink pattern 5 is under 6 and thus the low-luster pattern ink layer is in direct contact with the protective layer. The optical illusion will be present naturally and thus it is inherent. The optical illusion is present because whatever effects arises at the interfaces of 6 and 5 (concave portion first region, lower gloss) and the interfaces of the valley of 6 where no ink is present, has the higher gloss and is the corresponding second region. This is the same as Applicant describes in the instant specification found in Table 2, page 50 (Ink present, low gloss. No ink, high gloss). Therefore there are no differences in mechanism or structure, despite what Applicant alleges.

The secondary references where used to teach the ink composition claimed. See Morishima teaching the same Mn falling in the range of Applicant used in ink. Therefore, in combination the optical illusions and glosses as claimed are taught.

Applicant points to different pages in the instant specification, however, these limitations are not in the claim. Limitations from the specification are not read into the claim.

Applicant argues the penetration-preventive layer 8 is shown in Fig. 1, but Fig. 1 of Takahashi does not have element 8. The top of Applicant's remarks on page 6 is not understood.

Applicant argues the lamination order of claims 15, 17, 26, 27, 34 and 35 is not taught. However, the penetration-preventing layer is layer 2. Layer 5 is the low-luster ink pattern. Thus the order is as claimed.

Applicant argues the mixture of a resin component of the low-luster pattern ink and resin of the ionizing radiation curable resin of the surface protective layer to cause the claimed effects have been addressed above and repeated for this issue.

Applicant argues Takahashi's layer 5 is not penetrable by top coat 6. The Examiner submits layer 5 is the low-luster ink pattern. Thus Takahashi doesn't teach away from the invention.

Applicant argues the interaction of the resins of the low-luster and surface protective layers are not taught. Again, see answer above.

Applicant argues continuously the same thing - the interaction of the resins of the low-luster and surface protective layers are not taught. The Examiner's position is that it is taught for reasons above.

Applicant says that suspended particles or portions cause light to scatter and this is the reason for the illusion, however this is not claimed.

Applicant argues similar reasons for Takeuchi. Applicant appears to be arguing the references separately instead of as a wholly combined. Applicant argues Takeuchi doesn't teach the contact of the surface protective layer and low-luster ink to cause the claimed effects. However Takeuchi, Morishima, and Takahashi are all used to teach the claim. Thus, as set forth above, the entire invention is taught by the combined three references for the aforesaid reasons.

Applicant argues claims 15, 26, 17, 27, 34, and 35 stating the Examiner is treating the nonpenetrable layer as the low-luster pattern layer. Takahashi's layer 5 is not penetrable by top coat 6. The Examiner submits layer 5 is the low-luster ink pattern. Thus Takahashi doesn't teach away from the invention. The structure argued by Applicant of Takeuchi is not relied upon in the rejection because Takahashi teaches it.

Tsukada was used to teach a similar decorative material comprising an ink comprising Applicant's ionizing radiation-curable resin and its mixture with an ionizing uncureable resin vehicle (binder) employing urethane, polyesters or an acrylic acid modified polyester (similar structure to unsaturated polyester, thus similar properties expected) and a (meth)acrylate monomer (3:10-15, 3:65-68, 4:1-50, 7:60-68, 8:45-68, 9:9-30).

Morishima was used to teach the ink composition including unsaturated ester and acrylic (13:1-15, 9:25-30) and urethane resin which results in an excellent coating for printing on all substrates . Again, while the Tg is not disclosed, it is inherent because the Mn range is within the range of Applicant and Tg is directly related to Mn as it is well known to test the resin using a DSC (differential scanning calorimeter). The same ingredients are in the ink composition and thus the same properties are inherently expected absent evidence to the contrary. The combination of all references teaches the claimed invention.

Applicant continues to argue the penetration-prevention layer of Takahashi; however, the same answer is applied to this argument.

Applicant points to the instant specification pages 1-6, however, limitations from the specification are not in the claimed invention. Applicant argues the inventors have found the properties (discussed above) in view of the ink and protective layers direct contact (see discussion above), the particles will act differently in different states (i.e. suspended state). However, the same answer discussed above is applied.

Applicant argues varying the coating amount having an uneven ink thickness will exhibit a gradation pattern. However, the Takahashi patent shows this uneven gloss thickness. The ink thickness is a design feature and the thickness affects the optical density of the pattern. Thus thickness of ink patterns is not given patentable

weight for reasons set forth prior. However, if independent claim 1 is amended to include dependent claim 6, claim 1 would be allowable.

Applicant argues Takahashi would not have taught an ink layer having the required urethane Mn. However, Takahashi does teach the ink layer comprises polyurethane. Therefore it does suggest a urethane resin, while not the specific a specific one that is the claimed, the Morishima reference does teach the required Mn for durability among other reasons (see rejection above).

Applicant argues Takahashi's pattern layer is not completely compatible with the resin of the surface protective layer; however, there is no proof of this. Applicant argues the structure is different, but as said above, it isn't. Applicant argues there is a different mechanism from how Takahashi works, but structurally, as set forth above, the combination teaches the claimed invention.

Applicant argues Takahashi's layer 5 is a non-penetrable layer, however, the claims don't recite this.

Applicant argues that Morishima's self emulsifiable copolymer is non-analogous to Takahashi. However, this is not convincing because both are directed to decorative materials such as inks on any substrates in general. See detailed explanation above. Applicant argues the Tg being inherent in the self-emulsifiable copolymer and the Examiner has no evidence to back this. However, it is a well known scientific fact that when the Mn is the same range (the Morishima reference is evidence to this fact), the Tg

is indeed inherent. It is a property of the exact same material. All one needs to do is test it. Because the Patent Office does not have a DSC or GPC instruments to prove this, the burden lies with Applicant. See MPEP 2144.03 C on inadequate general allegations (see the instant reply "Applicants specifically traverse the contention by the Examiner that the glass transition temperature recited in the present claims would be inherent in the self-emulsifiable copolymer of Morishima, et al; the Examiner has provided no evidence or proper reasoning in support of this contention of inherency." This statement lacks the reasons why the Tg is not considered to be common knowledge). See MPEP 2112.01 describing a similar case concerning a claimed polymer and its properties. Lifted from the text of the MPEP 2112.01 [R-3]: "*When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.*" *In re Spada*, 911F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). This citation of *In re Spada* is used in the MPEP, and thus it is the MPEP that has pulled the relevant facts from this case for application purposes. The Examiner is not citing it as a discussion of the entire case. See MPEP 2112.01 II: "(...The Board correctly found that the virtual identity of monomers [in the instant case, the same urethane and meth(acrylate) Mn ranges according to instant claims 1 and 2] and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.'). A chemical composition and its properties (i.e. glass transition temperatures) are inseparable. See MPEP 2144.09 : A *prima facie* case of obviousness may be made

when chemical compounds have very close structural similarities and similar utilities.

“An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties.” Therefore, if the prior art (Morishima) teaches the identical or similar chemical composition, the properties applicant discloses and/or claims are necessarily present.

Applicant argues teachings of Ogawa, Klun, and MacQueen; however, no specific arguments were made in comparison or stated alleged differences. Thus, the rejection and the reasons for combining are set forth above.

Applicant argues layer 5 is non-penetrable, however, this is a separate issue than from being adjacent to the protective layer. It is this structure, and the interface resulting therefrom, the claimed interaction and illusion.

All other answers above are applied to the same arguments Applicant repeats.

Applicant argues the features are not a process limitation, however, as set forth above, the Examiner recognizes the ink, protective layer, and structure provides the properties.

Conclusion

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAMRA L. AMAKWE whose telephone number is (571)272-1519. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Ruthkosky can be reached on 571-272-1291. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Ruthkosky/
Supervisory Patent Examiner, Art Unit 1785

TAMRA L. AMAKWE /TLA/
Examiner
Art Unit 1785